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Whiteside

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(54) **FLOOR SINK FRAME AND GRATE ASSEMBLY**

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(21) Appl. No.: **13/572,643**

(22) Filed: **Aug. 11, 2012**

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(51) **Int. Cl.**
E03F 5/06 (2006.01)

(52) **U.S. Cl.**
CPC ***E03F 5/06*** (2013.01); *Y10T 29/49826* (2015.01)

(58) **Field of Classification Search**
CPC E04F 15/024; E04F 15/02411; E04F 15/02405; E04F 15/02476; E04C 2/423; E04C 2/427; E03F 5/06; E02D 29/14
USPC 4/652; 404/2; 47/25.1; 210/163
See application file for complete search history.

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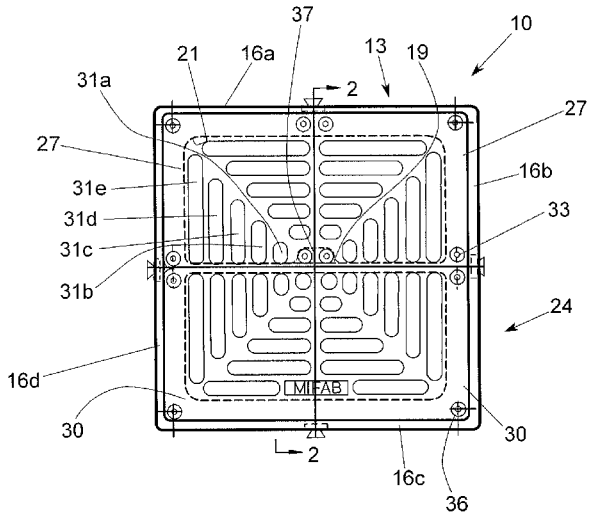
(57) **ABSTRACT**

A modular design for a floor sink frame and grate assembly. The standard floor grate sizes are whole, one half, and three-quarter. Instead of stocking each of these sizes, the present invention provides a modular system where individual pieces can be stocked and combined to form all of the above configurations.

13 Claims, 3 Drawing Sheets



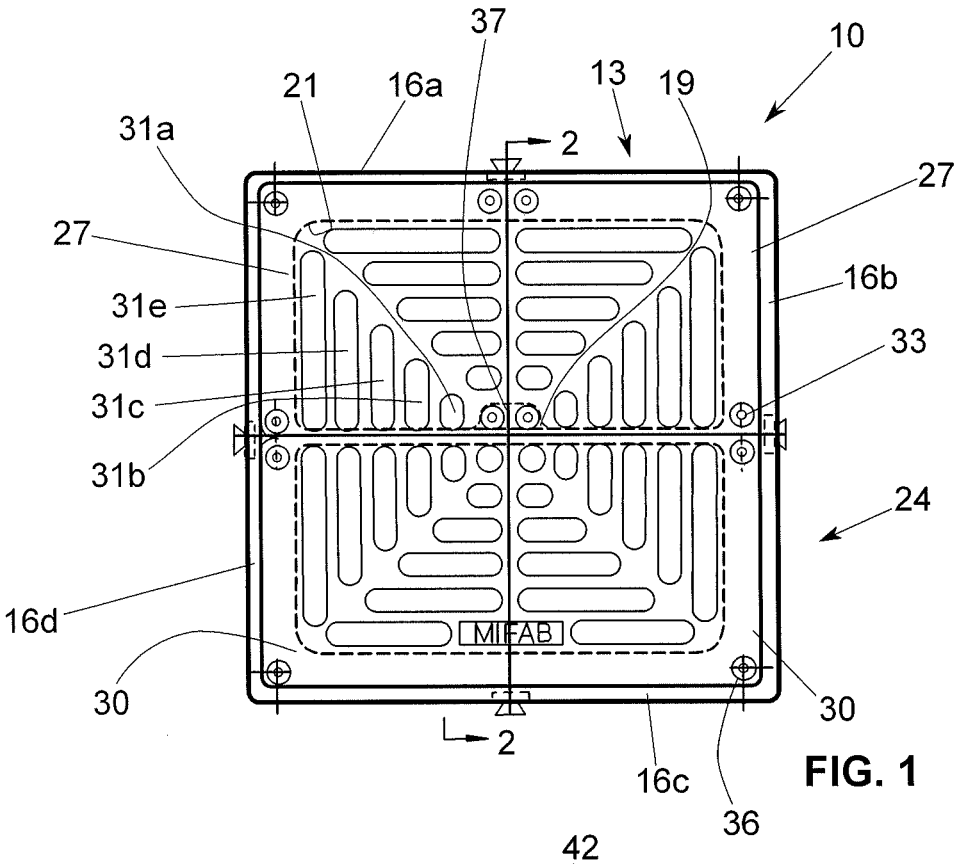

37
10
21
16a
13
19
31a
2
27
27
16b
31e
33
31d
31c
31b
24
16d
MIFAB
30
30
2
16c
36

FIG. 1

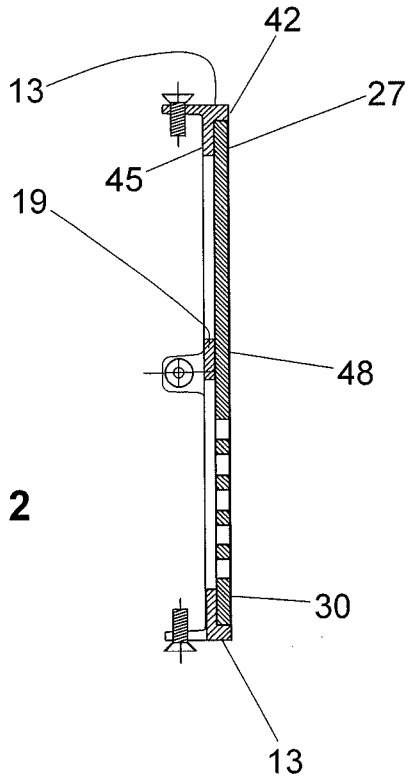
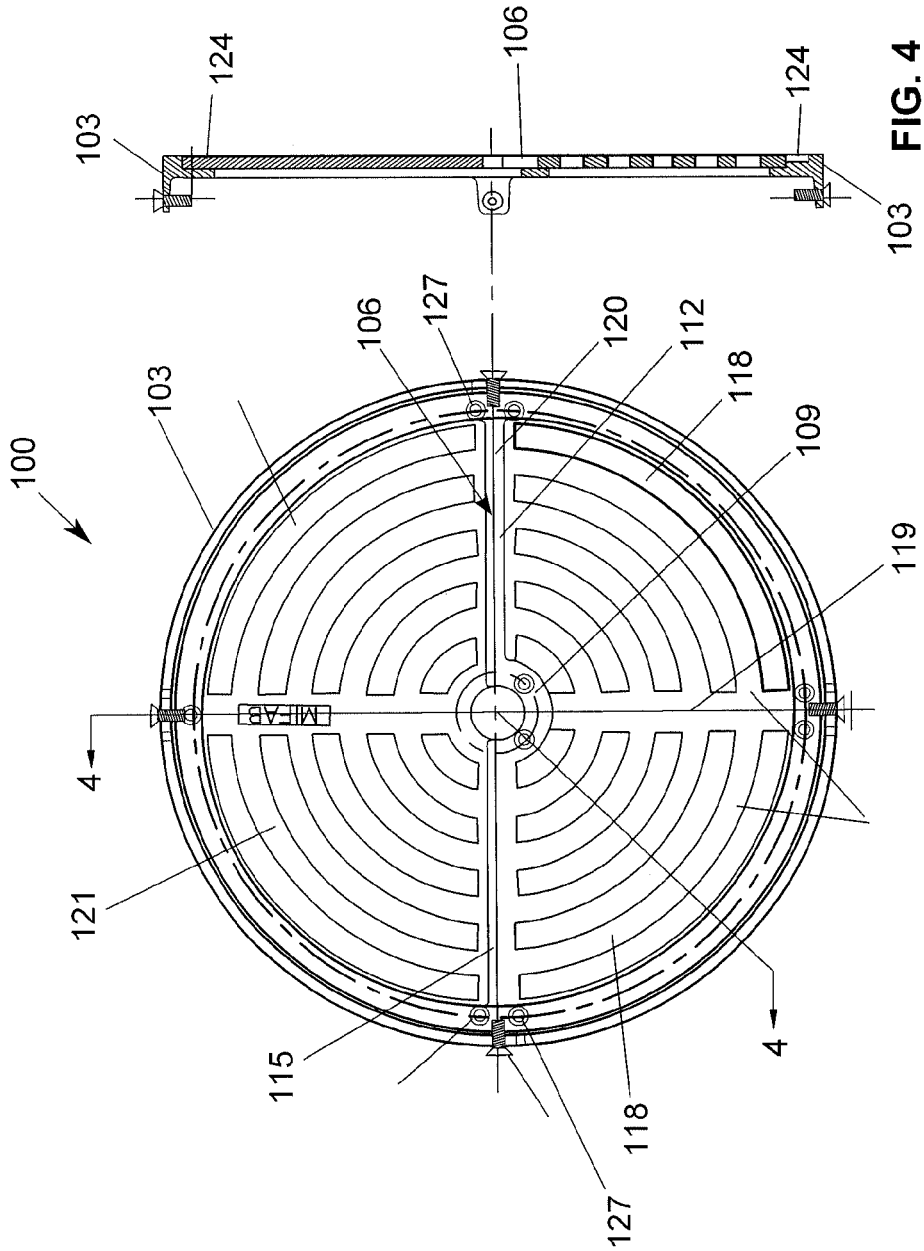

42
13
27
45
19
48
30
13

FIG. 2


124
106
124
103
103
FIG. 4
106
127
120
112
118
103
109
100
119
MIFAB
4
4
121
115
118
127
FIG. 3

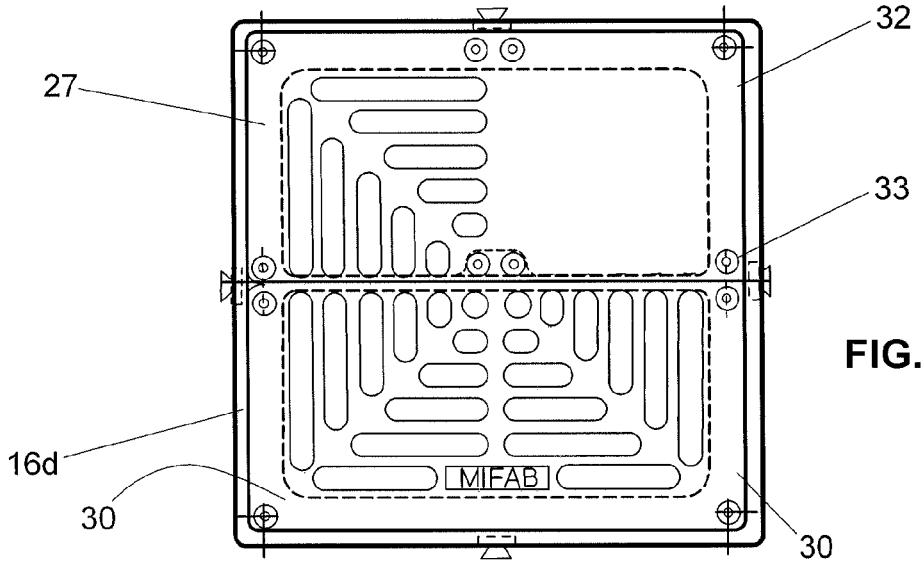


FIG. 5

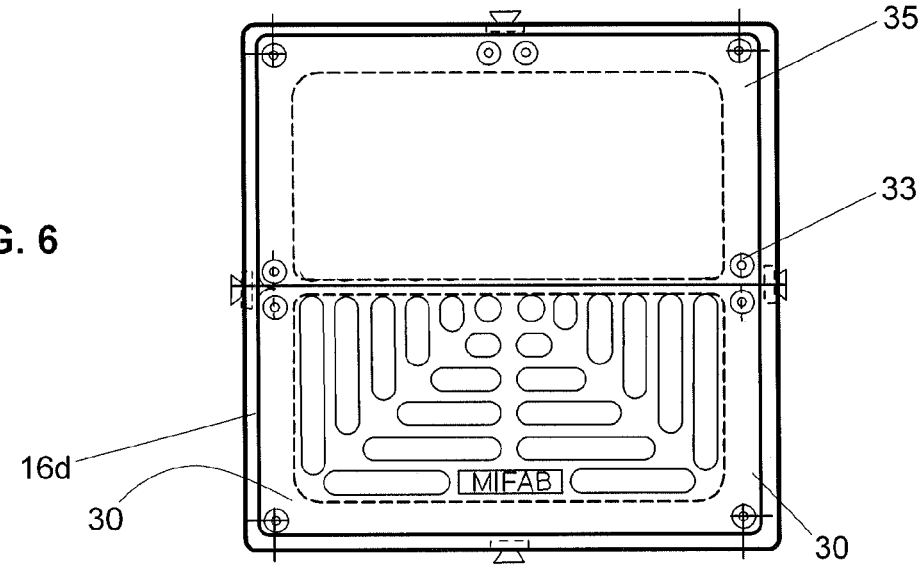


FIG. 6

FLOOR SINK FRAME AND GRATE ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATION

The present application claims priority benefit of U.S. Provisional Patent Application No. 61/522,809 filed on Aug. 12, 2011, entitled "Floor Sink Frame and Grate Assembly," which is incorporated herein by reference.

FIELD OF THE INVENTION

The present application pertains generally to plumbing and drainage products and specifically to a floor sink frame and grate assembly.

BACKGROUND OF THE INVENTION

A floor sink is a plumbing fixture that is installed in the floor of a structure which is mainly designed to remove any standing water near it. Floor sinks are typically installed in commercial basements, restrooms, kitchens, refrigerator areas, locker/shower rooms, laundry facilities, and near swimming pools. The sinks are typically round or square-shaped. A strainer or grate is typically secured over the floor sink to prevent injury or entry of foreign objects. Depending on the application, a floor sink may be provided with a whole grate, a one-half grate, or a three-quarter grate. For the partial grates, the remaining area of the drain is provided with a solid cover. As a result, standard floor sink designs require stocking of many different sizes of grates and covers to accommodate all of the variations. Accordingly, there is a need for a modular design for a floor sink frame and grate assembly.

SUMMARY OF THE INVENTION

The present invention meets the above-described need by providing an improved design for a floor sink frame and grate assembly. Instead of having separate grates for each of the configurations (one-half, three-quarter, and whole), the present invention provides a modular design where each of the above configurations can be constructed from two stock sizes. The improved design provides flexibility in manufacturing and installing the plumbing fixtures.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated in the drawings in which like reference characters designate the same or similar parts throughout the figures of which:

FIG. **1** is a top plan view of the floor sink frame and grate assembly of the present invention in a first configuration;

FIG. **2** is a cross-sectional view taken along line **2-2** of FIG. **1**;

FIG. **3** is a top plan view of an alternate embodiment of the present invention; and,

FIG. **4** is a cross-sectional view taken along line **4-4** of FIG. **3**;

FIG. **5** is a top plan view of an alternate configuration of the first embodiment; and

FIG. **6** is a top plan view of another alternate configuration of the first embodiment.

DETAILED DESCRIPTION OF THE INVENTION

The present invention comprises a modular design for a floor sink frame and grate assembly. The standard floor grate sizes are whole, one half, and three-quarter. Instead of stocking each of these sizes, the present invention provides a modular system where individual pieces can be stocked and combined to form all of the above configurations.

Turning to FIGS. **1-6** generally and initially to FIG. **1**, a square shaped frame and grate assembly **10** is shown. The frame **13** has four side walls **16***a*, **16***b*, **16***c*, and **16***d* having approximately the same length and forming a square-shaped opening. The frame **13** also includes a cross member **19** (FIG. **2**) that extends through the center of the opening **18**. The inner edge **21** of the frame **13** is shown in broken lines. The configuration shown is a whole floor grate assembly **24** formed by two one-quarter grate members **27** and one one-half grate member **30**. The one-quarter grate members **27** are substantially square in shape with four sides. The grate members **27**,**30** may be provided with a plurality of openings **31***a*, **31***b*, **31***c*, **31***d*, and **31***e*. The openings **31***a-e* shown are elongated and each opening, in succession, may be longer than the previous opening. There are two sets of openings **31***a-e* in each of the one-quarter grate members **27** shown. As an alternative, solid members may be substituted for some of the grate members. By substituting a solid member for a grate having openings, the overall floor grate can be configured to create a whole, one half, or three quarter grate. If one of the one-quarter grates **27** is substituted with a one-quarter solid member **32**, then a three-quarter grate configuration results as shown in FIG. **5**. If both of the one-quarter grate members **27** or if the one-half grate member **30** is substituted with a one-half solid member **35** then a one-half grate configuration results as shown in FIG. **6**. The grate members **27**, **30** may be secured to frame **13** by means of fasteners **33** disposed through openings **34** in the grate members **27**, **30** that align with openings **36** in the frame **13**. As shown the openings **34** may be disposed at the corners of each grate member **27**, **30**. The cross member **19** may be provided with an extended portion **37** toward the middle to provide for attaching the grate members **27** to the cross member **19** in the middle of FIG. **1**.

As best shown in FIG. **2**, the frame **13** has an upper surface **42** and a recessed portion **45** that forms a shelf for receiving a grate members **27**, **30**. The recessed portion **45** may extend around the entire periphery of the frame **13**. Cross member **19** may extend from one side of the frame **13** to the other at a midpoint of opposing sidewalls **16***a* and **16***c*. As shown in FIG. **2**, the cross member **19** has a top surface **48** that is approximately level with the upper surface **42** of the recessed portion such that the grates **27**, **30** are held in an approximately level position.

Turning to FIG. **3**, a floor sink frame and grate assembly **100** may also be constructed in a round shape. The sink frame **103** has a round outside shape and also includes a cross member **106** that extends from one side of the frame **103** to the other side across the diameter. In the center the cross member **106** has an arcuate portion **109** extending between to lateral portions **112**, **115**. The assembly also includes two grate members **118**, **121**. A one-quarter grate member **118** has an approximately ninety degree angle between two side walls **119**, **120**. The half grate member **121** has an approximately one hundred-eighty degree arc. The two grate members **118**, **121** can be stocked to provide interchangeability between one-half, three-quarter and whole grate assemblies. In FIG. **3**, a one-half grate member **121** is combined with two one-quarter grate members **118** to provide a whole grate assembly. By substituting solid members for the one-quarter or one-half grate members **118**, other configurations (three-quarter, one-half) can be formed as described above.

In FIG. **4**, the cross-sectional view shows a recessed portion **124** formed on the frame **103** providing a shelf that receives the grate assemblies **118**, **121**. Toward the center of the figure, the cross member **106** provides support and an attachment point for the one-quarter grate assemblies **118**. The grate assemblies **118**, **121** are attached to the frame **103** by means of fasteners **127** shown around the perimeter of the figure.

While the invention has been described in connection with certain embodiments, it is not intended to limit the scope of the invention to the particular forms set forth, but, on the contrary, it is intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention.

What is claimed is:

1. A floor sink frame and grate system, comprising: a frame defining a perimeter surrounding a central opening, the frame having an upstanding wall with an upper surface, the upstanding wall disposed along at least a portion of the perimeter, the frame having a recessed portion disposed in spaced apart relation to the upper surface to form a shelf extending around at least a portion of the perimeter, the frame having a cross member extending from a first side of the frame toward a second side of the frame along a midportion of the frame; at least one first grate member having an area approximately equal to one-quarter of the area of the opening, the first grate member having a plurality of bars and a plurality of elongated openings defined therein to form an open lattice work permitting the passage of liquid through the first grate member, the first grate member having a plurality of openings for receiving fasteners for attaching the first grate member to the recessed portion and the cross member, the at least one first grate member being supported by the recessed portion and the cross member; a second grate member having an area approximately equal to one-half of the area of the opening, the second grate member having a plurality of bars and a plurality of elongated openings defined therein to form an open lattice work permitting the passage of liquid through the second grate member, the second grate member having a plurality of openings for receiving fasteners for attaching the second grate member to the recessed portion, the second grate member being supported by the recessed portion;

a first cover member having an area approximately equal to one-quarter of the area of the opening, the first cover member having a plurality of openings for receiving fasteners for attaching the first cover member to the frame;

a second cover member having an area approximately equal to one-half of the area of the opening, the second cover member having a plurality of openings for receiving fasteners for attaching the second cover member to the frame; and,

wherein two or more selected from the group consisting of the first grate member, the second grate member, the first cover member, and the second cover member are combined to form one of a whole, three-quarter, and one-half grate configuration.

2. The floor sink frame and grate system of claim **1**, wherein the cross member has a midportion having a width greater than the remainder of the cross member.

3. The floor sink frame and grate system of claim **1**, wherein the cross member has a midportion that extends towards the perimeter of the frame.

4. The floor sink frame and grate system of claim **3**, wherein the midportion of the cross member is arcuate.

5. The floor sink frame and grate system of claim **1**, wherein the overall shape of the frame is rectangular.

6. The floor sink frame and grate system of claim **1**, wherein the overall shape of the frame is circular.

7. A method of making a modular floor sink frame and grate system, comprising the steps of: providing a frame defining a perimeter surrounding a central opening, the frame having an upstanding wall with an upper surface, the upstanding wall disposed along at least a portion of the perimeter, the frame having a recessed portion disposed in spaced apart relation to the upper surface to form a shelf extending around at least a portion of the perimeter, the frame having a cross member extending from a first side of the frame toward a second side of the frame along a midportion of the frame; providing a first grate member having an area approximately equal to one-quarter of the area of the opening, the first grate member having a plurality of bars and a plurality of elongated openings defined therein to form an open lattice work permitting the passage of liquid through the first grate member, the first grate member having a plurality of openings for receiving fasteners for attaching the grate member to the frame, the first grate member being supported by the recessed portion and the cross member when the first grate member is installed in the frame; providing a second grate member having an area approximately equal to one-half of the area of the opening, the second grate member having a plurality of bars and a plurality of elongated openings defined therein to form an open lattice work permitting the passage of liquid through the second grate member, the second grate member having a plurality of openings for receiving fasteners for attaching the second grate member to the frame, the second grate member being supported by the recessed portion when the second grate member is installed in the frame; providing a first cover member having an area approximately equal to one-quarter of the area of the opening, the first cover member having a plurality of openings for receiving fasteners for attaching the first cover member to the frame; the first cover member being supported by the recessed portion and the cross member when the cover member is installed in the frame; providing a second cover member having an area approximately equal to one-half of the area of the opening, the second cover member having a plurality of openings for receiving fasteners for attaching the second cover member to the frame; the second cover member being supported by the recessed portion when the cover member is installed in the frame; and

combining the grate members and cover members to form one of a whole, three-quarter and one-half grate configuration.

8. The method of claim **7**, wherein the cross member has a midportion having a width greater than the remainder of the cross member.

9. The method of claim **7**, wherein the cross member has a midportion that extends towards the perimeter of the frame.

10. The method of claim **7**, wherein the midportion of the cross member is arcuate.

11. The method of claim **7**, wherein the overall shape of the frame is rectangular.

12. The method of claim **7**, wherein the overall shape of the frame is circular.

13. A method of making a modular floor sink frame and grate system, comprising the steps of: providing a frame defining a perimeter surrounding a central opening, the frame having an upstanding wall with an upper surface, the upstanding wall disposed along at least a portion of the

perimeter, the frame having a recessed portion disposed in spaced apart relation to the upper surface to form a shelf extending around at least a portion of the perimeter, the frame having a cross member extending from a first side of the frame toward a second side of the frame along a midportion of the frame; providing a first grate member having an area approximately equal to one-quarter of the area of the opening, the first grate member having a plurality of bars and a plurality of elongated openings defined therein to form an open lattice work permitting the passage of liquid through the first grate member, the first grate member having a plurality of openings for receiving fasteners for attaching the grate member to the frame, the first grate member being supported by the recessed portion and the cross member when the first grate member is installed in the frame; providing a second grate member having an area approximately equal to one-half of the area of the opening, the second grate member having a plurality of bars and a plurality of elongated openings defined therein to form an open lattice work permitting the passage of liquid through the second grate member, the second grate member having a plurality of openings for receiving fasteners for attaching the second grate member to the frame, the second grate member being supported by the recessed portion when the second grate member is installed in the frame; providing a first cover member having an area approximately equal to one-quarter of the area of the opening, the first cover member having a plurality of openings for receiving fasteners for attaching the first cover member to the frame; the first cover member being supported by the recessed portion and the cross member when the cover member is installed in the frame; providing a second cover member having an area approximately equal to one-half of the area of the opening, the second cover member having a plurality of openings for receiving fasteners for attaching the second cover member to the frame; the second cover member being supported by the recessed portion when the cover member is installed in the frame; and,

combining two or more selected from the group consisting of the first grate member, the second grate member, the first cover member and the second cover member to form one of a whole, three-quarter and one-half grate configuration.

* * * * *